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Abstracts Book

Advances in remote sensing: potential to gain insight into the ecosystem services of eucalypt plantations

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Satellite remote sensing is increasingly used on agricultural and forestry sectors for spatial characterization, management and monitoring of large areas at stand or intra-stand scales. This usage will increase in the future with the expansion of the number and quality of sensors and the analysis capacities. This presentation review the main type of earth observation sensors, their physical principles, and their main usage in forestry and agronomy. Then a focus is given on the particular case of remote sensing of Eucalyptus industrial plantations for estimation of plantation area and afforestation dynamics; stand biochemical and structural characteristics; plant water status and other functional variables; cultivation practices and different aspects of stand management. Tropical and subtropical Eucalyptus plantations specificities require special attention while using generic methods or products, and often need the development of dedicated methodologies, advocating for more specific research. Successful use of remote-sensing for spatial characterization and monitoring of eucalyptus plantations (e.g. biomass, leaf area index, classification, etc.), but also main issues and knowledge gaps are illustrated with examples from Brazil. In a broader aspect, these remote sensing characterisation could be used for ecosystem services assessments such as water use, carbon sequestration, wood production and environmental impacts. This is discussed through three major development points 1) the necessary synergy between remote sensing and process-based models; 2) the watershed-scale spatialization and modelling of the spatial interactions;. 3) to take advantage of the potentiality offered by current and future satellite mission and analysis methods.

Keywords: Remote sensing, Ecosystem services, Eucalyptus plantation

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